



Volunteer Lake Assessment Program Individual Lake Reports

PARTRIDGE LAKE, LITTLETON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	896	Max. Depth (m):	15.8	Flushing Rate (yr ⁻¹)	0.6
Surface Area (Ac.):	104	Mean Depth (m):	5.8	P Retention Coef:	0.71
Shore Length (m):	4,500	Volume (m ³):	2,434,000	Elevation (ft):	846

TROPHIC CLASSIFICATION

Year	Trophic class
1992	MESOTROPHIC
2006	MESOTROPHIC

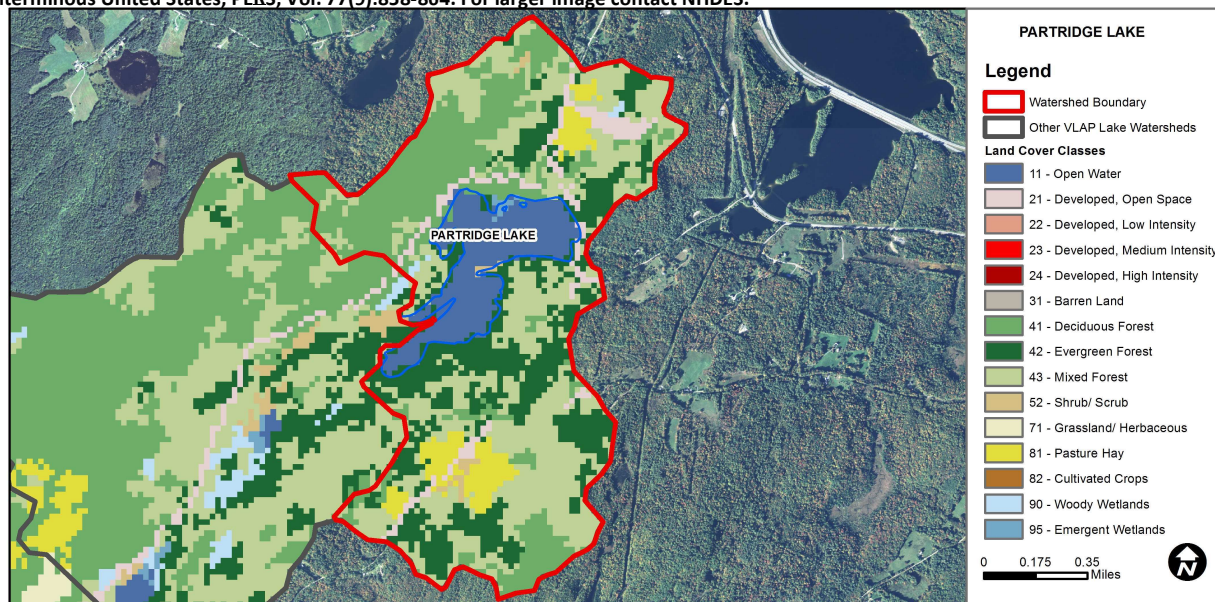
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Very Good	At least 10 samples with 0 exceedances of criteria.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Good	>=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Encouraging	>2 samples exist that are > 75% of geometric mean criteria, but not enough samples to calculate geometric mean. No single sample exceedances. More data needed.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	10.3	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	4.41	Deciduous Forest	21.65	Pasture Hay	5.02
Developed-Low Intensity	0	Evergreen Forest	23.15	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	33.72	Woody Wetlands	0.25
Developed-High Intensity	0	Shrub-Scrub	0.71	Emergent Wetlands	0.25



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

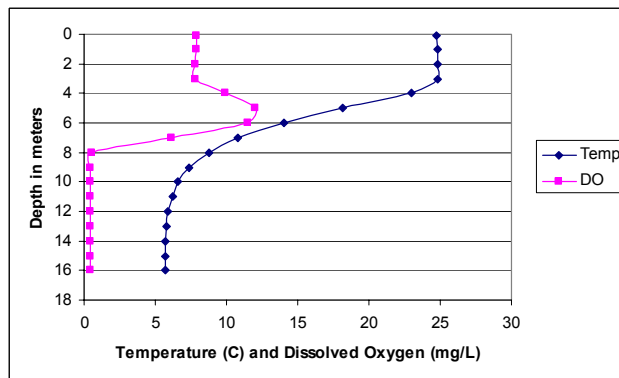
PARTRIDGE LAKE, LITTLETON, NH

2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- ♣ **CHLOROPHYLL-A:** Chlorophyll levels were low and less than the NH lake median. Historical trend analysis indicates a significantly improving (decreasing) chlorophyll level since monitoring began. We hope to see this continue!
- ♣ **CONDUCTIVITY/CHLORIDE:** Conductivity levels were slightly elevated at all stations and greater than the NH lake median.
- ♣ **E. COLI:** E. coli levels were much less than state standards for public beaches and surface waters.
- ♣ **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) phosphorus levels were low and much less than the NH lake median. Historical trend analysis indicates a significantly decreasing (improving) epilimnetic phosphorus level. We hope to see this continue! The hypolimnetic (lower water layer) phosphorus level was elevated, dissolved oxygen levels low, and turbidity elevated. This indicates that internal loading may occur when dissolved oxygen levels decrease and phosphorus is released from lake sediments.
- ♣ **TRANSPARENCY:** Transparency decreased slightly as the summer progressed but was greater than the NH lake median and improved from 2010 and 2011. Historical trend analysis indicates a relatively stable transparency since monitoring began.
- ♣ **TURBIDITY:** Hypolimnetic turbidity was elevated throughout the summer due to natural processes. Metalimnetic (middle water layer) turbidity was slightly elevated in August potentially due to a layer of algae at this depth.
- ♣ **pH:** pH levels decrease to undesirable levels in the hypolimnion.
- ♣ **RECOMMENDED ACTIONS:** The improved phosphorus and chlorophyll levels are a result of watershed management efforts by the lake association. Continue implementing best management practices in the watershed to reduce pollutant loading. Conduct chloride monitoring to establish a baseline data set to assess chloride impacts on conductivity levels. Keep up the great work!

Dissolved Oxygen & Temperature Profile



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: < 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: 6.5-8.0 (unless naturally occurring)

Station Name	Table 1. 2012 Average Water Quality Data for PARTRIDGE LAKE							
	Alk.	Chlor-a	Cond.	E. Coli	Total P	Trans.	Turb.	pH
	mg/l	ug/l	uS/cm	#/100ml	ug/l	m	ntu	
						NVS		
Deep Epilimnion	25.2	3.52	80.2		6	5.40	0.78	7.61
Deep Metalimnion			79.8		17		2.75	7.27
Deep Hypolimnion			85.8		95		4.52	6.67
Inlet 1			101.7	27	22		1.56	7.36
Inlet 10			100.2		9		1.12	7.39
Inlet 6			103.6		14		0.84	7.49
Outlet			72.0		6		0.65	7.56

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Improving	Data significantly decreasing.
Transparency	Stable	Data not significantly increasing or decreasing.
Phosphorus (epilimnion)	Improving	Data significantly decreasing.

This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:
Sara Steiner
PO Box 95
Concord, NH 03302-0095
(603) 271-2658
sara.steiner@des.nh.gov

